

Serial No. 10/649,885

QTI-10502

DRAWING AMENDMENT

Per the Examiner's observation that Figure 1 is prior art, the "Prior Art" legend has been applied to that portion of the drawing. Enclosed is the revised version (above).

SPECIFICATION AMENDMENTS

On page 4, lines 19 and 20, replace each instance of "tab" with - tap -

On page 6, line 21, replace "D2" with -T2-.

CLAIM AMENDMENTS

Claims 4, 7, 8, 12, 13, 14, 15, 16, 20, 23, and 24 are hereby cancelled.

In claims 6 and 22, change "the" before "sensing circuit" to - a -

Claim 11 (Currently Twice Amended). A shut-down circuit configured for use with an electronic ballast coupled to a lamp in a control path, the circuit comprising:

a device for sensing voltage fluctuations in the control path; and

a circuit high-pass filter or differentiator for shutting down the ballast in the event that the voltage fluctuations contain high-frequency noise indicative of arcing, including arcing caused by lamp installation or removal; and

electronic componentry to disable the sensing circuit during initial energization of the lamp.

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Add the following claims:

Claim 25 (new). An abnormal load condition detection circuit configured for use with an electronic ballast, the circuit comprising:

a device for sensing the electrical energy associated with a load path;

a series pass switch element that acts as a one-way diode when not actuated, and which acts as a negligible resistance when actuated;

and a high pass filter for actuating the series pass switch element when the harmonic content of the load energy is above a sufficient threshold;

whereby the alternating current from the device for sensing is rectified when the switch element is not energized, producing a maximal DC voltage when load drive fundamental frequency content is present along with harmonic content level typical of normal operation; and reducing that DC voltage in case of lower harmonic content, signifying short circuit, or in the absence of the fundamental, signifying open circuit, or when excess harmonic content through the high pass filter actuates the series pass switch element, signifying an arcing condition is present, or in case of a combination of abnormal conditions.

Claim 26 (new). The circuit of claim 25, further including a shutdown circuit, that actuates when the DC voltage output of the said detection circuit varies from a predetermined level.

Claim 27 (new) The circuit of claim 25, wherein the device for sensing the electrical energy associated with the load path is an isolation transformer.

Claim 28 (new) The circuit of claim 25, wherein the device for sensing the electrical energy associated with the load path is an optoisolator.

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Claim 29 (new). The circuit of claim 26, further including a delay element means for suppressing the said shutdown circuit that is independent of the inherent time constant of the said filter circuit.

Claim 30 (new) A shut-down circuit configured for use with an electronic ballast coupled to a lamp in a control path, the circuit comprising: a device for sensing electrical energy associated with the control path; and an electrical sensing circuit controlling a switch element for shutting down the ballast in the event that the sensed energy contains high-frequency noise indicative of arcing, including arcing caused by lamp installation or removal.

Claim 31. (new) The circuit of Claim 30, wherein the device for sensing the electrical energy associated with the control path is an isolation transformer, whose secondary is disposed in series with the switch element control output.

Claim 32. (new) The circuit of Claim 30, wherein the device for sensing the electrical energy associated with the control path includes an optical isolator whose control output is disposed in series with the switch element control output..